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[54] **OCCUPANT OPERATED MOTORIZED VEHICLE WITH LIFT ASSIST**

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[73] Assignee: **The Advanced Technologies Corp.**, Kansas City, Mo.

[21] Appl. No.: **08/969,230**

[22] Filed: **Nov. 13, 1997**

Related U.S. Application Data

[60] Provisional application No. 60/030,691, Nov. 13, 1996.

[51] **Int. Cl.**[7] **B62M 1/14**

[52] **U.S. Cl.** **280/250.1**; 180/907; 297/DIG. 10; 5/86.1

[58] **Field of Search** ..... 180/907; 280/250.1, 280/87.041; 5/611, 83.1, 86.1; 297/DIG. 4, DIG. 10

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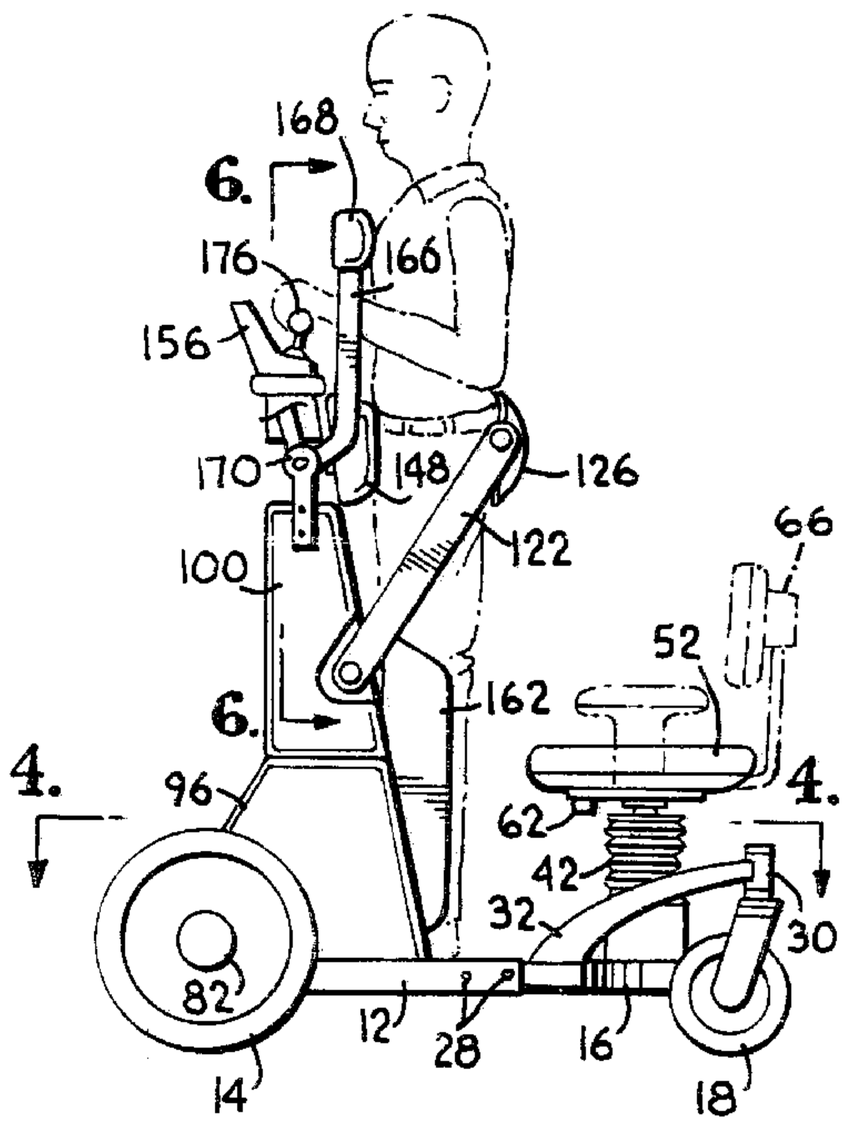
Primary Examiner—Daniel G. DePumpo

Attorney, Agent, or Firm—Shook, Hardy & Bacon LLP

[57] **ABSTRACT**

An occupant-operated motorized vehicle is provided having a motorized front wheel assembly. The vehicle is further provided with an operator controlled lifting structure which aides the occupant in coming to a standing position. The lifting structure includes a linear actuator that is coupled to a clevis, which is in turn coupled to a shaft. Activation of the actuator causes the clevis and therefore the shaft to rotate. Attached to each end of the shaft is a lift lever that extends rearwardly away from the shaft. The end of the lever not attached to the shaft are equipped to be coupled to a support sling that is used to support the occupant and raise the occupant to a standing position. The vehicle is further equipped with a seat to accommodate the occupant in an initial seated position, and at any time that the occupant desires to be in a seated position. The vehicle of the invention also includes a hip support which is used to support the occupant in a stable, standing position and which may be adjusted vertically to enhance the support and comfort of the occupant.

19 Claims, 4 Drawing Sheets



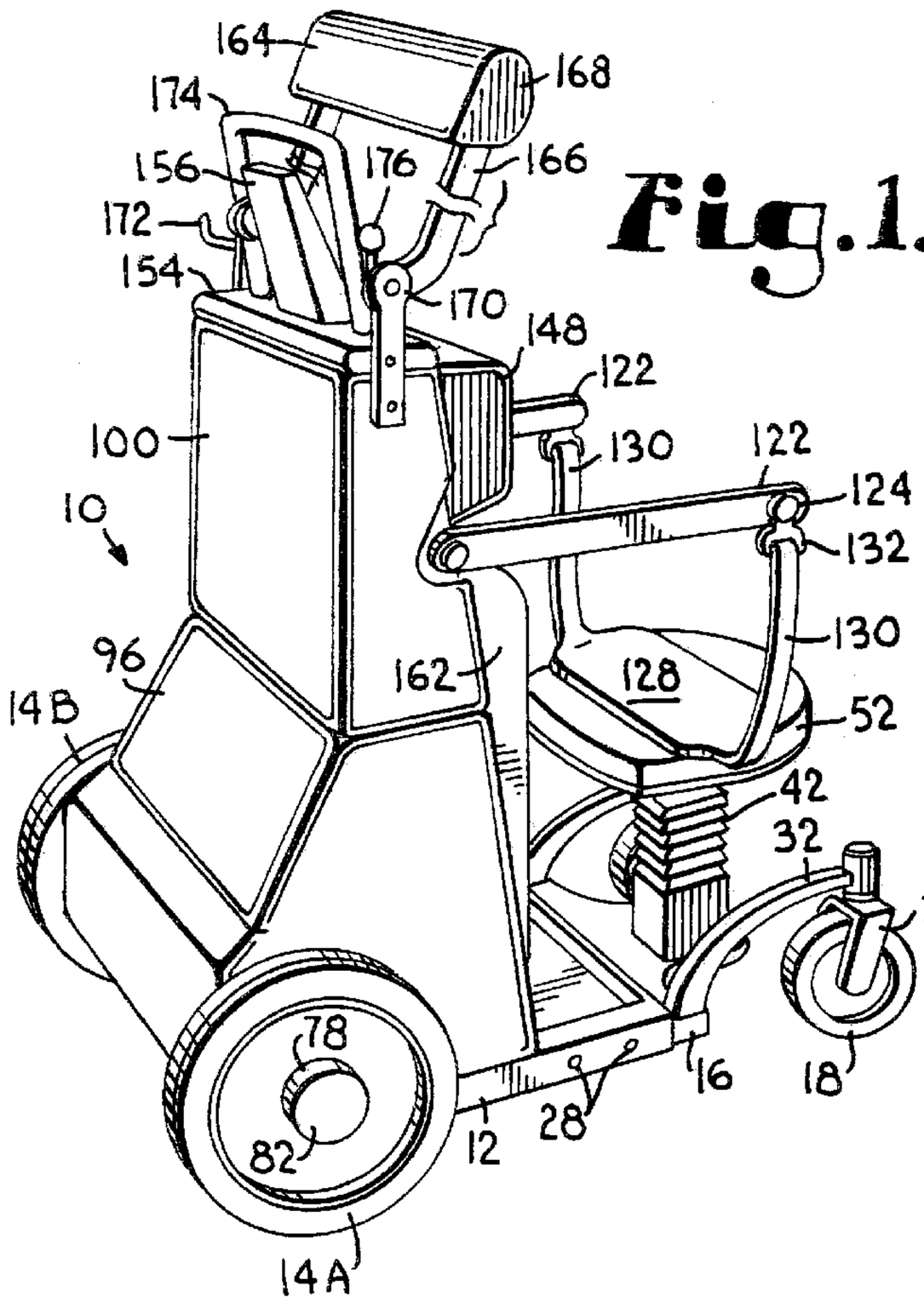
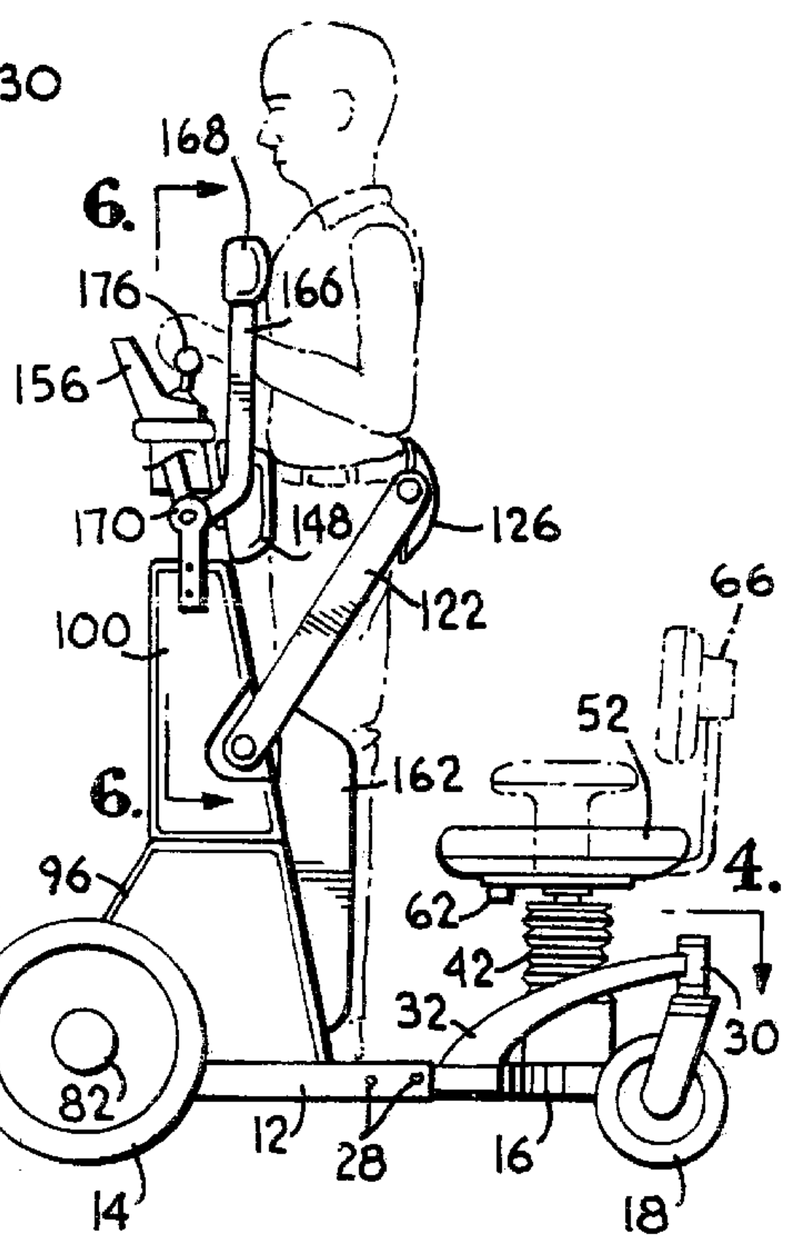


Fig.1.

Fig.3.



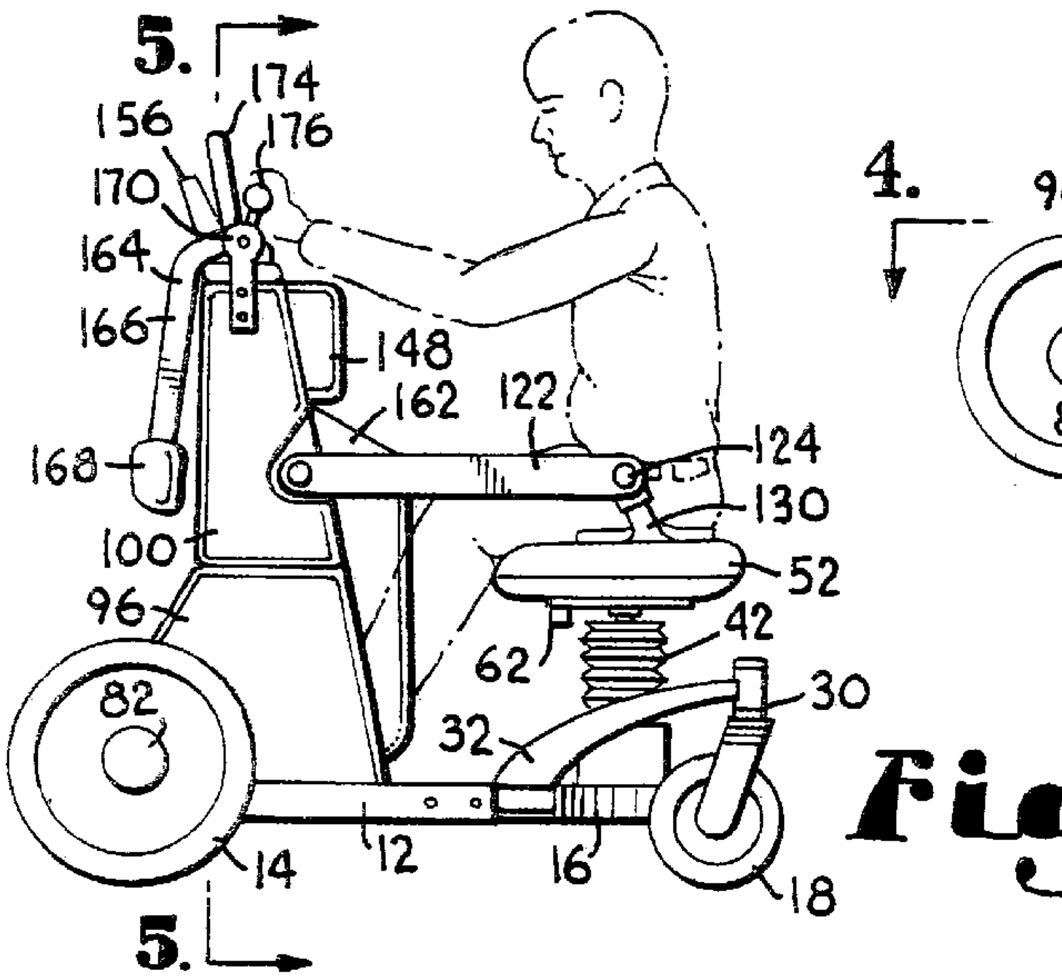


Fig.2.

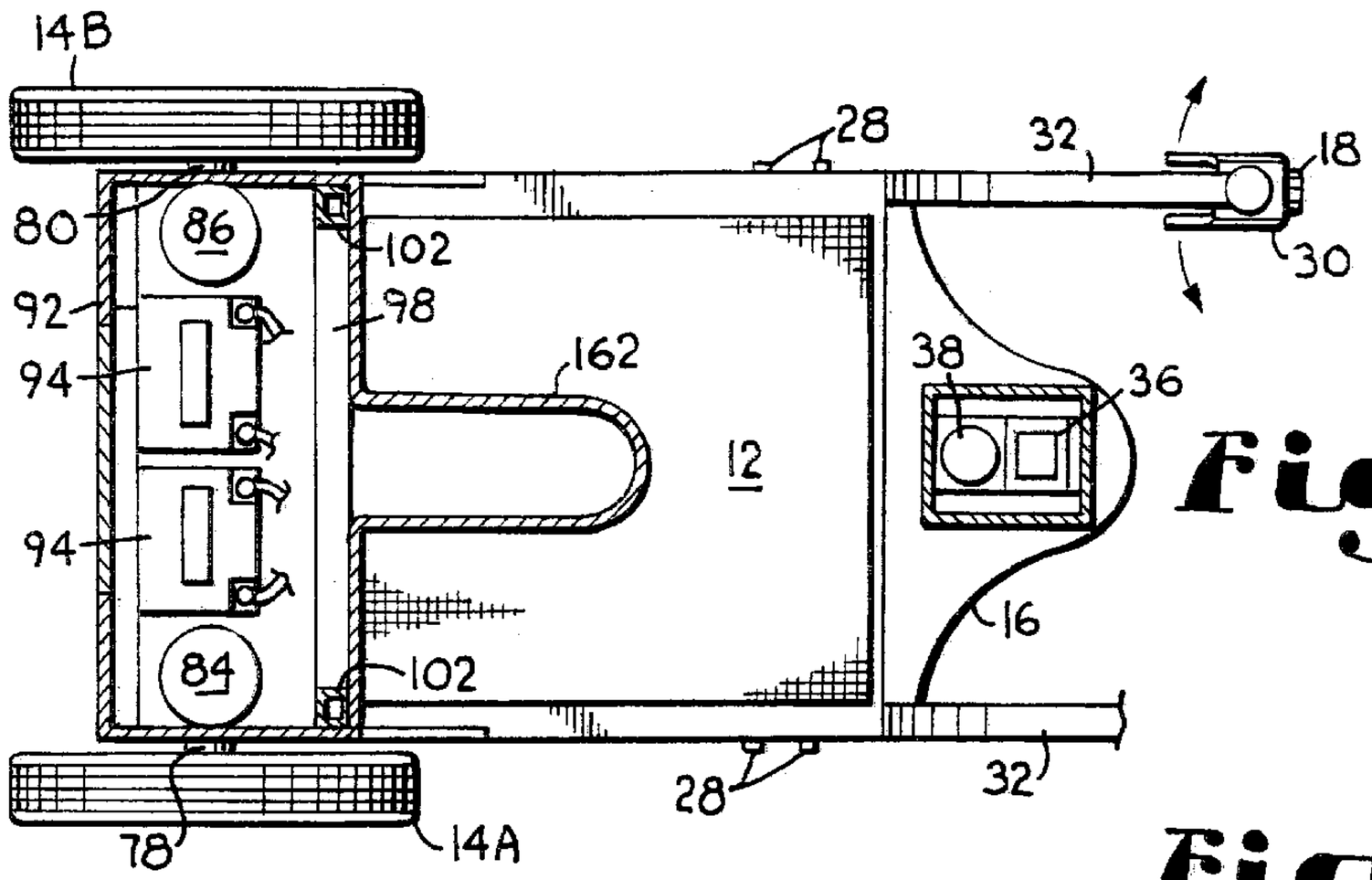
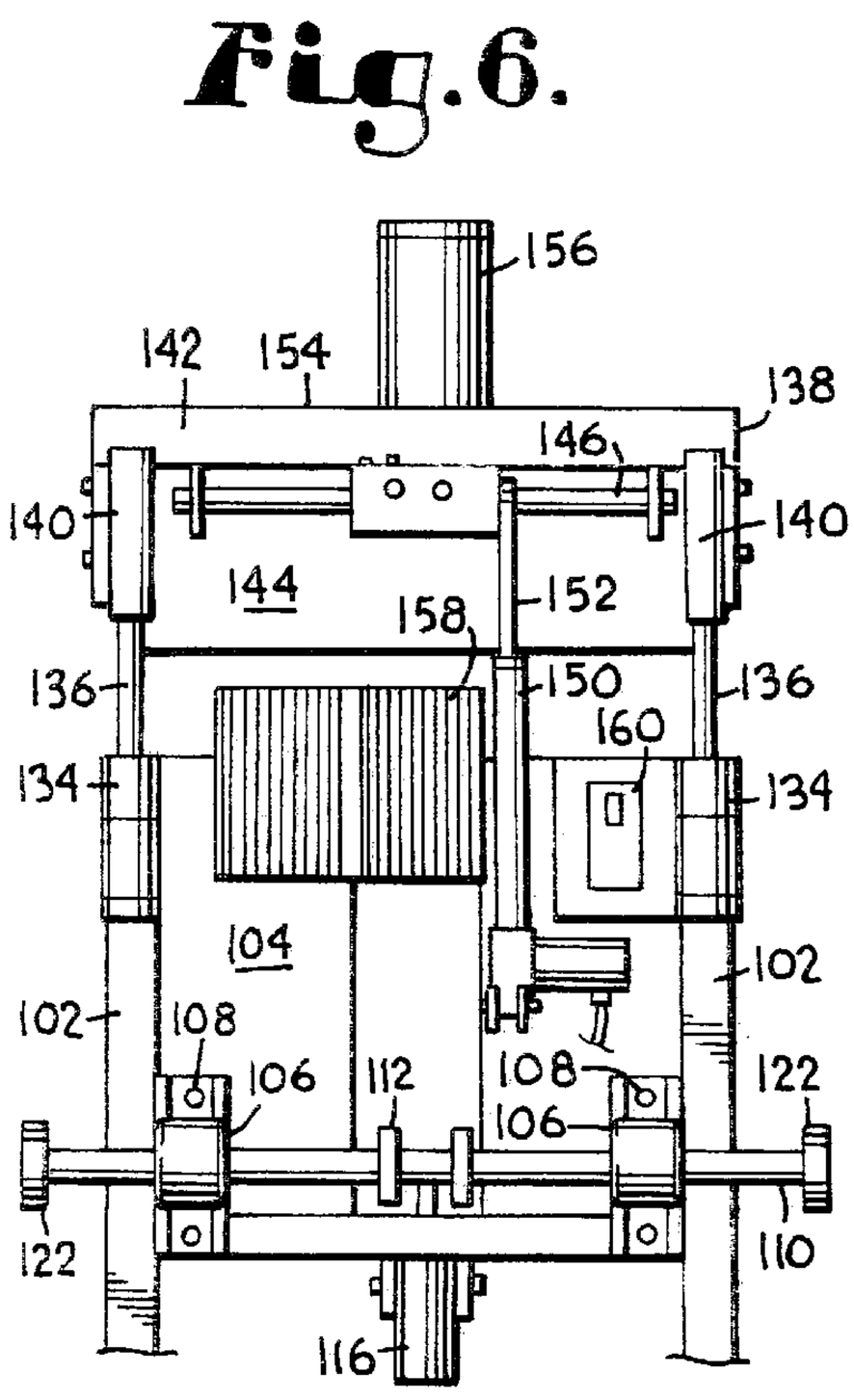
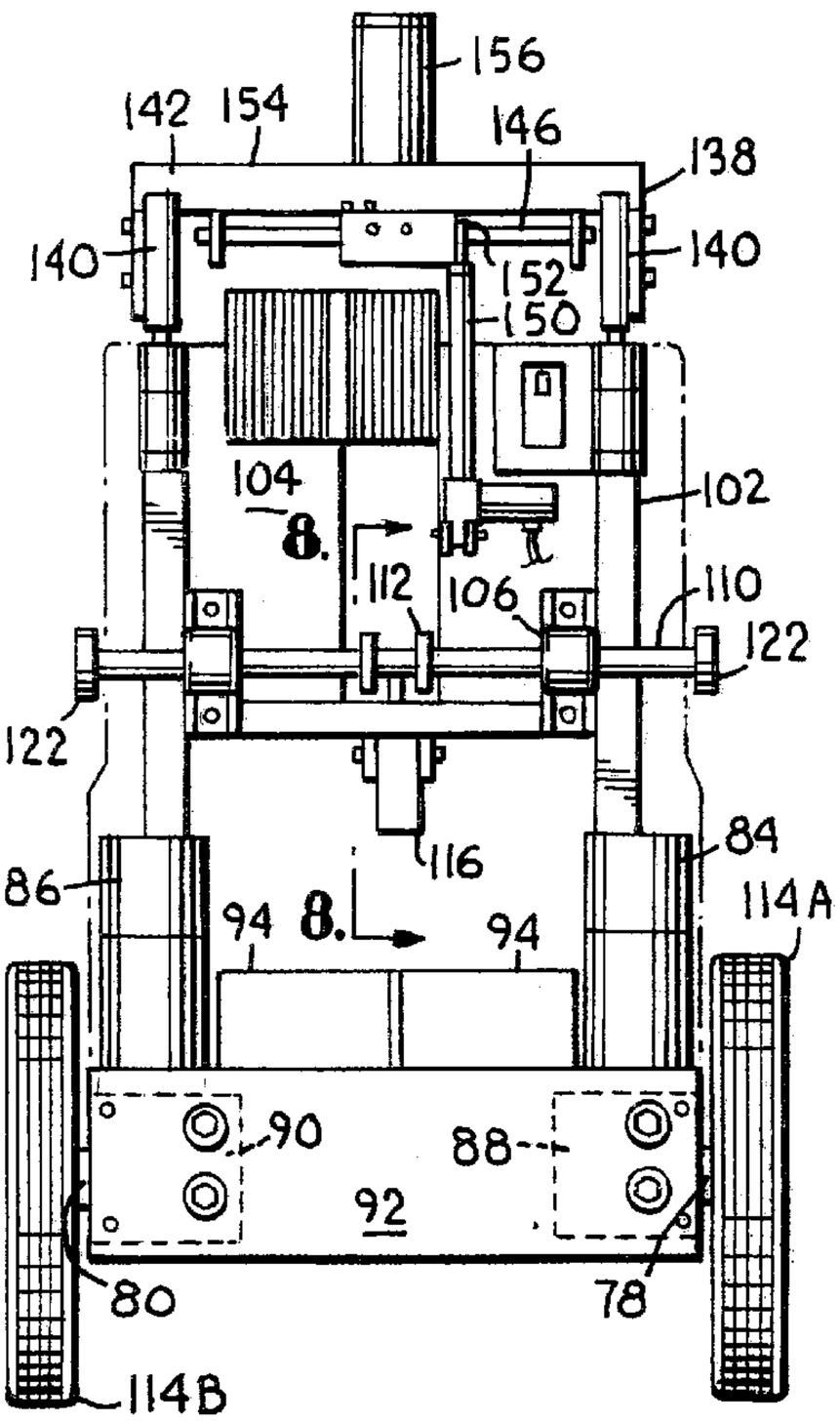


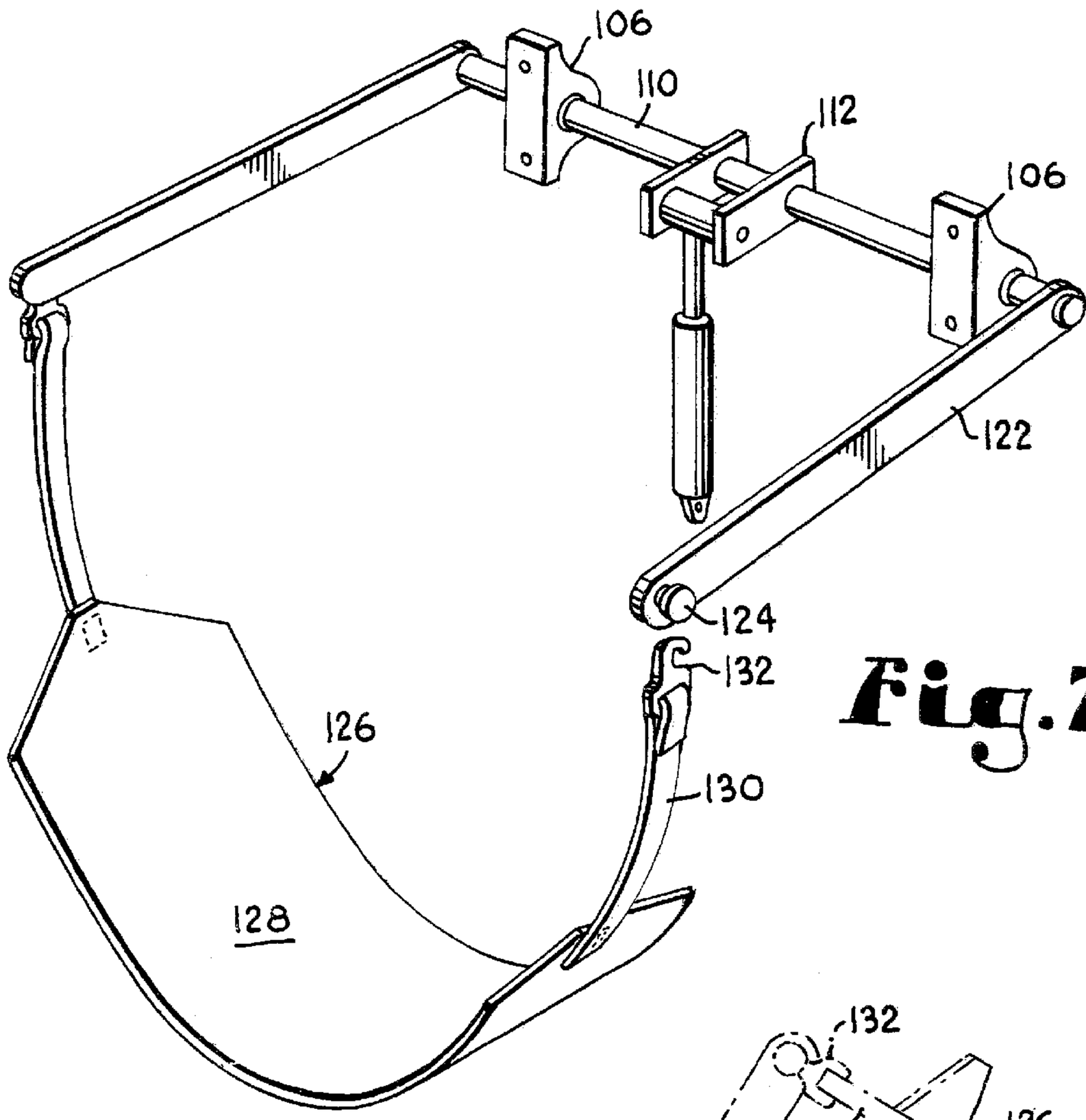
Fig.4.

Fig.5.

Fig.6.






106
110
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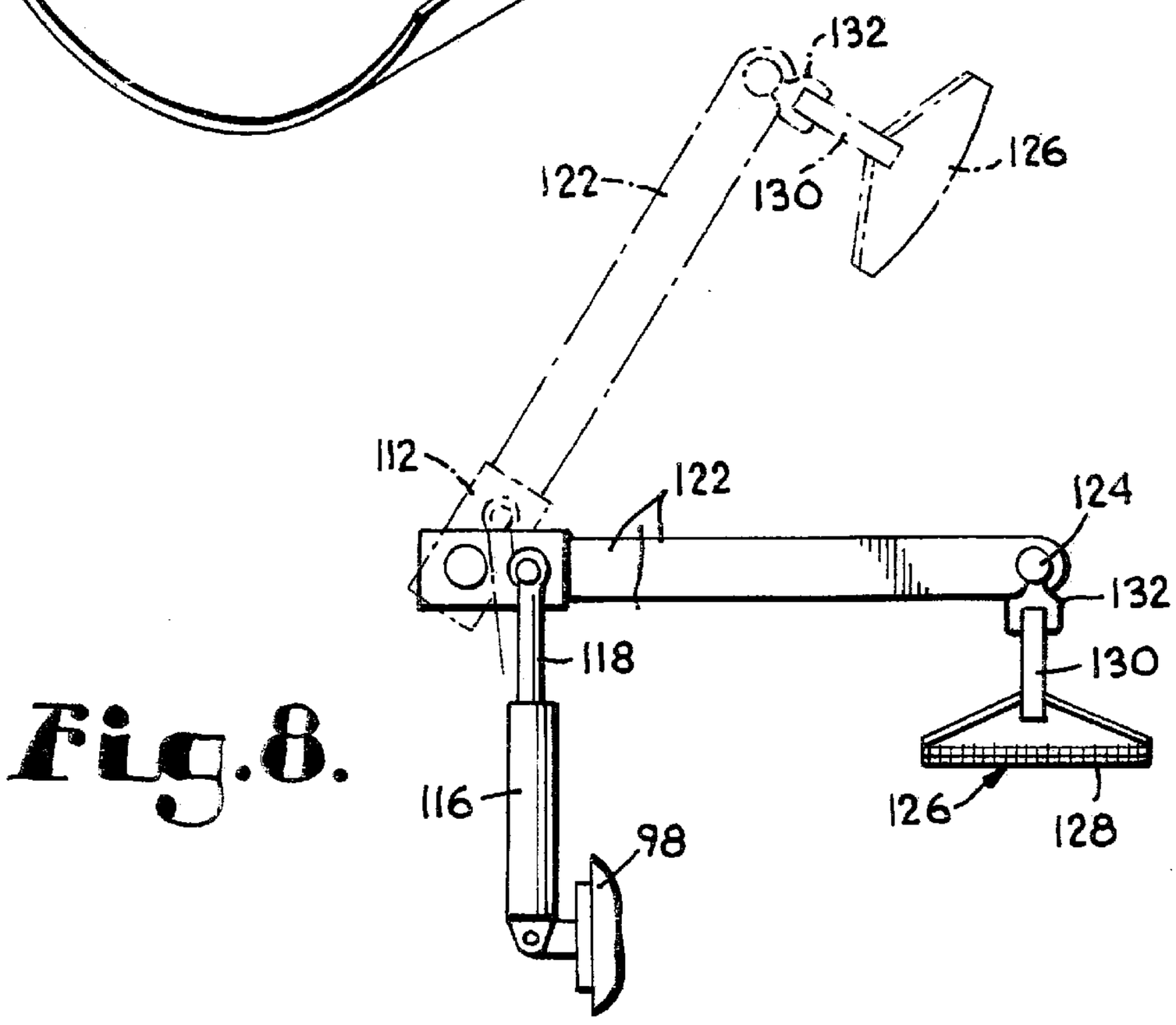
128

Fig.7.


132
122
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112
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Fig.8.

Fig. 9.

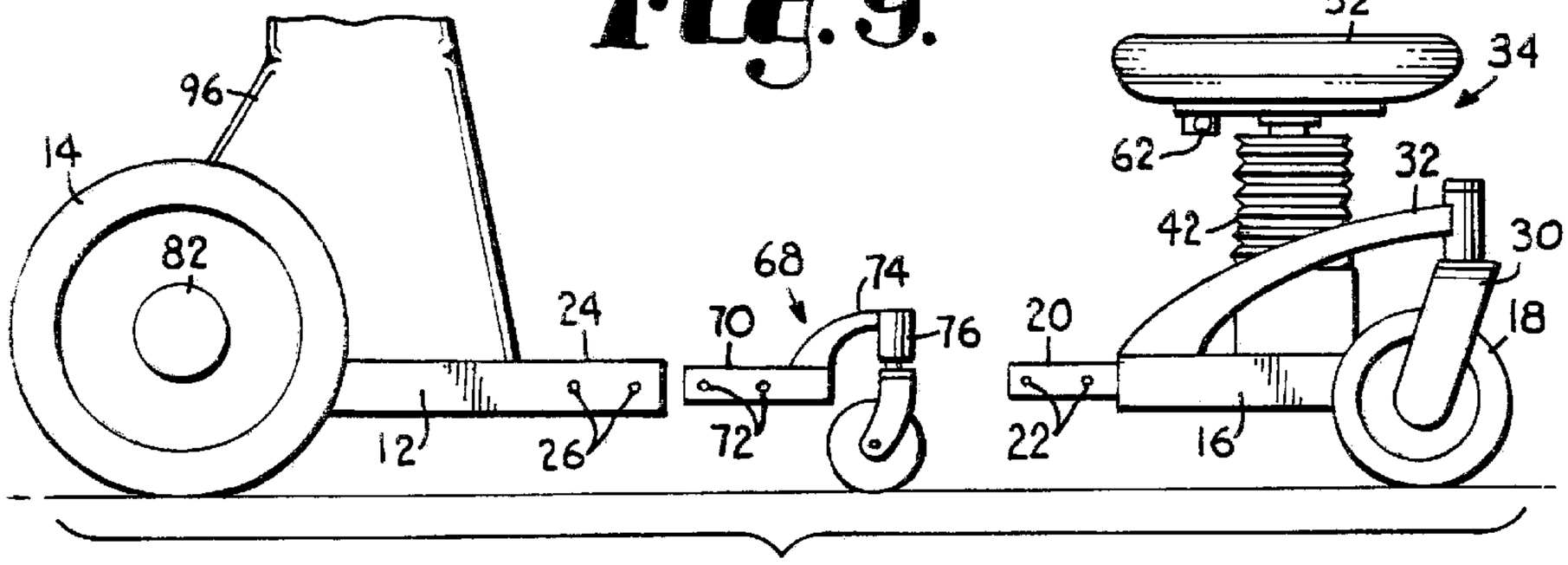


Fig. 10.

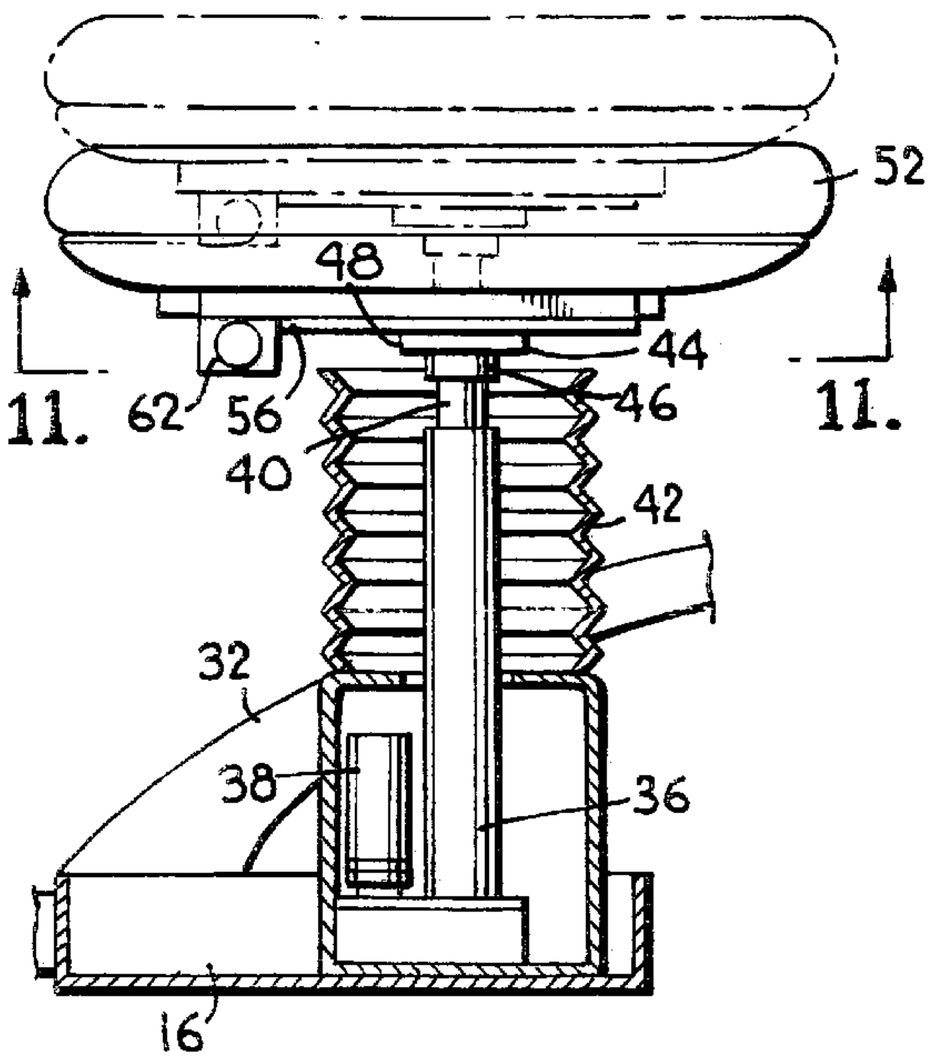
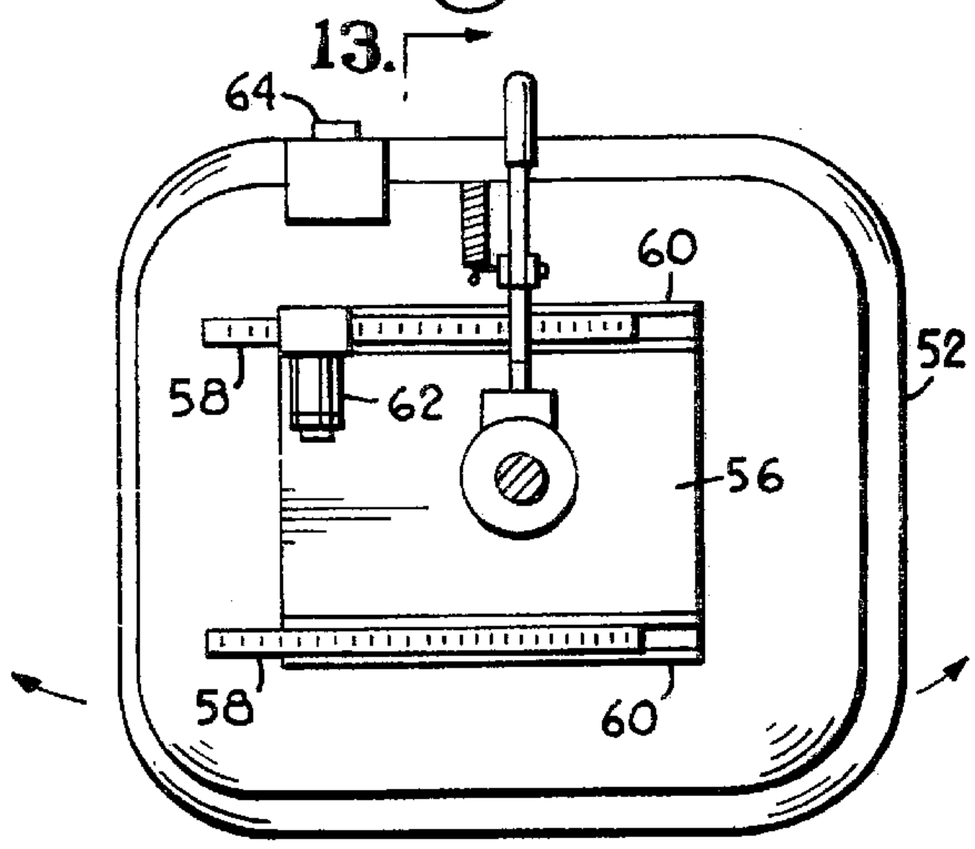


Fig. 11.



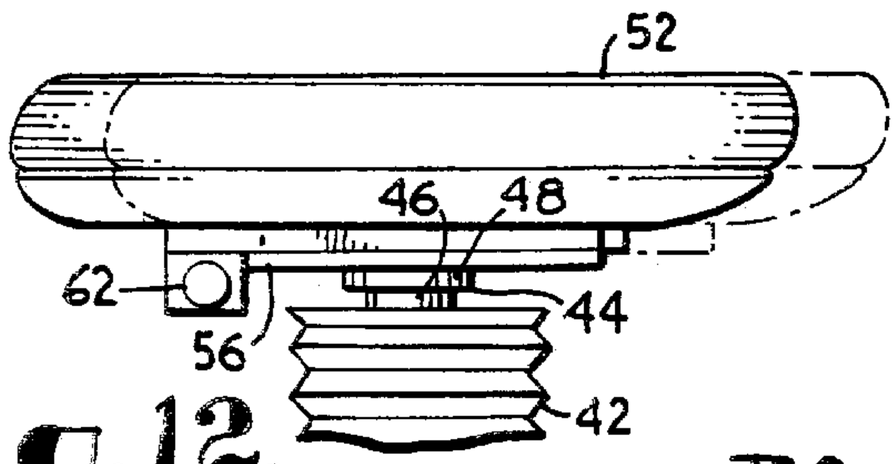


Fig. 12.

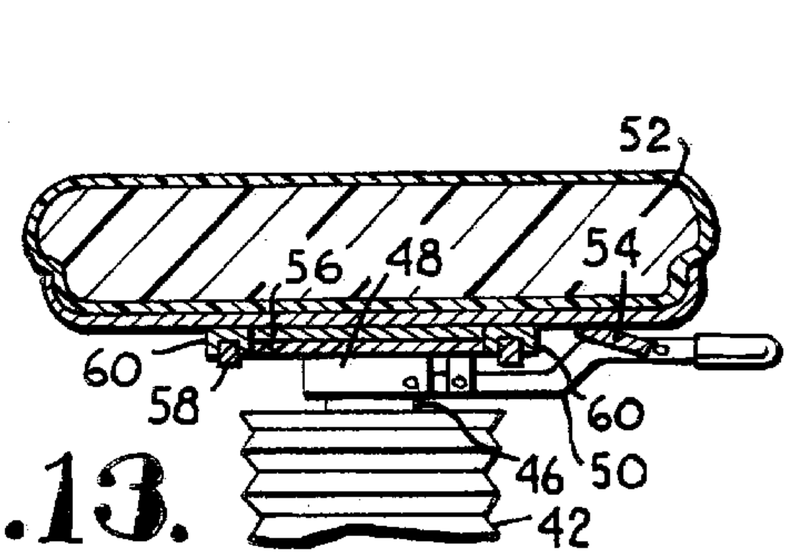


Fig. 13.

OCCUPANT OPERATED MOTORIZED VEHICLE WITH LIFT ASSIST

CROSS-REFERENCE TO RELATED APPLICATION

This application claims the benefit of U.S. Provisional Application No. 60/030,691, filed Nov. 13, 1996.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not Applicable.

BACKGROUND OF THE INVENTION

This invention relates to a motorized vehicle for supporting and transporting paraplegics and other handicapped persons and, more particularly, to a motorized vehicle for supporting and transporting paraplegics and other handicapped persons that is equipped with a lift assist structure.

Vehicles have been designed for use by individuals physically handicapped in their legs, and particularly paraplegic individuals, that allow the individual user to be supported in a standing position. These vehicles support the occupant's body in a standing posture that allows the occupant to reach a work area with his or her hands. The challenge addressed by these previous vehicles was to provide a vehicle that supported the occupant in a stable, standing position while still maintaining the necessary degree of maneuverability to allow for movement around objects and through doors. One such previous vehicle is disclosed in U.S. Pat. No. 4,155,416. The vehicle disclosed in U.S. Pat. No. 4,155,416 is a motorized, occupant-operated vehicle that supports physically handicapped people in a stable, standing position. The vehicle so disclosed allows the occupant to access work areas in front of the vehicle. Another patent disclosing such a vehicle is U.S. Pat. No. 4,437,537. U.S. Pat. No. 4,437,537 discloses a structure for mounting on a vehicle that allows the vehicle to tilt forwardly, which allows the occupant access to objects and areas on or near the floor on which the vehicle is traveling.

While the vehicles disclosed in the above-mentioned patents do allow a handicapped individual to be supported in a standing position once within the vehicle, the vehicles of the type shown in the patents suffer from a number of disadvantages. The major disadvantage of the above-referenced vehicles is that they are difficult for the occupant to enter. For example, a vehicle of the type generally shown in U.S. Pat. No. 4,155,416 requires the occupant to place his feet on a footplate and thereafter grasp an upper structure of the vehicle and pull himself up to a standing position. Once in the standing position, the occupant can secure a support belt in place to lock himself in position within the vehicle. Therefore, use of such a vehicle requires that the user have sufficient upper body strength to be able to pull himself up to a standing position. If a person does not have this amount of upper body strength, then he or she will require assistance to enter the vehicle.

Another disadvantage associated with the above-referenced vehicles is that they do not provide a structure to allow the occupant to be supported in a seated position. In other words, the occupant using the above-referenced vehicles will always be supported in a standing position. It is often desirable or necessary for the occupant to be supported in a seated position. Further, it is often desirable for the occupant to have the ability to select between a seated and a standing position. The vehicles of the type described above do not provide a structure to support an occupant in a seated position, or a structure which allows the height of

a seat structure to be adjusted between a variety of heights to increase the comfort of the occupant and the use to which the vehicle is put.

Yet another disadvantage of the above-discussed vehicles is that the hip support, against which the occupant's hips are rested for support, is not fully adjustable. Depending on the size of the occupant and the task being performed by the occupant, it is often desirable to adjust the hip support to increase the comfort of the user.

Therefore, an occupant-operated motorized vehicle is needed which overcomes the drawbacks and deficiencies of the existing vehicles discussed above.

BRIEF SUMMARY OF THE INVENTION

Accordingly, it is an object of the present invention to provide an occupant-operated motorized vehicle that allows the occupant to be supported in a standing position in which the occupant can enter the vehicle with less effort and less upper-body strength than required by presently available vehicles.

Another object of the invention is to provide an occupant-operated motorized vehicle that allows the occupant to be supported in different postures and positions, such as standing and sitting to enhance the functionality of the vehicle.

A further object of the invention is to provide an occupant-operated motorized vehicle in which the hip support against which the occupant's hips are supported can be adjusted to a number of different heights to further increase the comfort of the user.

A still further object of the invention is to provide an occupant-operated motorized vehicle that can be equipped with a seat for use by the occupant which can be adjusted to a number of different heights so that different sizes of occupants can be accommodated.

According to the present invention, the foregoing and other objects are obtained by an occupant-operated motorized vehicle that is provided with a motorized front wheel assembly. The vehicle is further provided with an operator controlled lifting structure which aides the occupant in coming to a standing position. The lifting structure includes a linear actuator that is coupled to a clevis, which is in turn coupled to a shaft. Activation of the actuator causes the clevis and therefore the shaft to rotate. Attached to each end of the shaft is a lift lever that extends rearwardly away from the shaft. The ends of the levers not attached to the shaft are equipped to be coupled to a support sling that is used to support the occupant and raise the occupant to a standing position. The vehicle is further equipped with a seat to accommodate the occupant in an initial seated position, and at any time that the occupant desires to be in a seated position. The vehicle of the invention also includes a hip support which is used to support the occupant in a stable, standing position and which may be adjusted vertically to enhance the support and comfort of the occupant.

Additional objects, advantages, and novel features of the invention will be set forth in part in the description which follows, and in part will become apparent to those skilled in the art upon examination of the following, or may be learned from practice of the invention.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

In the accompanying drawings which form a part of the specification and are to be read in conjunction therewith and in which like reference numerals are used to indicate like parts in the various views:

FIG. **1** is a perspective view of an occupant-operated motorized vehicle according to the principles of the invention, with the lift levers in a lowered position and the sling attached thereto;

FIG. **2** is a side elevation view of the invention of FIG. **1**, shown with an occupant in a seated position within the vehicle;

FIG. **3** is a side elevation view similar to FIG. **2**, shown with the occupant in a standing position, with a portion of the seat shown in phantom in a partially raised position and with the hip support in a partially extended position;

FIG. **4** is a detailed partial cross-sectional view of the invention of FIG. **1**, taken along line **4—4** of FIG. **3**;

FIG. **5** is a detailed cross-sectional view of the invention of FIG. **1**, taken along line **5—5** of FIG. **2**;

FIG. **6** is a view similar to that of FIG. **5**, taken along line **6—6** of FIG. **3**, showing the hip support in a partially extended position;

FIG. **7** is a view of the lifting structure of the invention of FIG. **1**, showing elements of the lifting structure and their relation;

FIG. **8** is a detailed cross-sectional view taken along line **8—8** of FIG. **5**, with the lifting structure shown in a raised position in phantom lines;

FIG. **9** is a partial side elevation view of the invention, showing both an embodiment equipped with a seat, and an embodiment without a seat;

FIG. **10** is a partial, enlarged cross-sectional view of the seat of the invention of FIG. **1**, showing the vertical adjustment of the seat;

FIG. **11** is a cross-sectional view of the bottom of the seat taken along **11—11** of FIG. **10**;

FIG. **12** is a partial, enlarged cross-sectional view similar to FIG. **10**, showing the horizontal adjustment of the seat; and

FIG. **13** is a sectional view of the seat taken along line **13—13** of FIG. **11**.

DETAILED DESCRIPTION OF THE INVENTION

An occupant-operated motorized vehicle embodying the principals of this invention is broadly designated in the drawings by the reference numeral **10**. With initial reference to FIG. **1**, vehicle **10** includes a base **12** that rotatably supports a pair of front wheels **14**. Vehicle **10** also includes a seat base **16** that rotatably supports a pair of rear wheels **18**. Seat base **16** is removably coupled to base **12**, as best seen in FIG. **9**. Seat base **16** has a pair of extending, spaced apart and parallel coupling arms **20**. Each coupling arm **20** has a pair of through holes **22** extending therethrough. Coupling arms **20** are inserted into a rear, square tubing section **24** of base **12**. Tubing **24** has a pair of through holes **26** correspondingly spaced with through holes **22**. As best seen in FIG. **4**, bolts **28** are placed through through holes **22** and **26** to couple base **12** to seat base **16**.

Each rear wheel **18** of seat base **16** is held within a caster **30** which is coupled to one end of a wheel support **32**. Caster **30** supports wheel **18** so that it can freely rotate on a horizontal axis, and can also freely rotate or swivel about a vertical axis to accommodate turning vehicle **10**, as is well-known in the art. The opposite end of wheel support **32** is fixedly attached to seat base **16**, such as by welding. Wheel supports **32** are arched and are attached so that they extend rearwardly and upwardly away from seat base **16**,

thus providing rear wheels **18** with a support as well as the clearance necessary to allow wheels **18** to swivel completely about the vertical axis.

As best seen in FIG. **10**, mounted approximately midway between each of the wheel supports **32** on seat base **16** is a seat assembly **34** that includes a ball drive pedestal actuator **36** mounted to seat base **16**. An exemplary actuator is available from the Motion Systems Corporation of Eatontown, N.J., and has a motor **38** which operates to adjust an inner member **40** vertically up and down, as shown by the solid and phantom lines in FIG. **10**, through the use of an inner ball drive. A protective flexible boot **42** surrounds actuator **36** to protect actuator **36** from dust and debris. Inner member **40** is coupled to a swivel bracket **44** which includes a lower portion **46** and an upper portion **48**. Lower portion **46** is fixedly secured to inner member **40**. Upper portion **48** is rotatingly coupled to lower portion **46**. As best seen in FIGS. **11** and **13**, extending outwardly from upper portion **48**, and pivotally secured thereto, is a locking lever **50** which is used to secure a seat **52** is place. More specifically, lower portion **46** has a series of spaced apart locking spaces into which locking lever **50** is placed. When locking lever **50** is placed within the locking spaces, seat **52** is no longer free to rotate. Locking lever **50** may be pivoted away from lower portion **46** allowing seat **52** to be rotated, as shown by the arrows in FIG. **11**. Locking lever **50** is biased by a spring **54** into a position within the locking spaces to prevent seat **52** from rotating when not desired.

As best seen in FIG. **11**, upper portion **48** of swivel bracket **44** is rigidly coupled to a rectangular plate **56** which has secured thereto a pair of longitudinal, parallel rails **58**. Rails **58** are slidingly disposed in a pair of longitudinal, parallel, u-shaped tracks **60** which are fixedly secured to the bottom of seat **52**. Coupled to at least one of the tracks **60** is a linear actuator **62**, which is operable by position switch **64**. Position switch **64** activates actuator **62** when depressed so that seat **52** moves along tracks **60**, allowing seat **52** to be adjusted forwardly or rearwardly, as shown by the solid and phantom lines in FIG. **12**. Power for both actuator **36** and actuator **62** is supplied by a power source within vehicle **10**, as is more fully described below. Seat **52** may be equipped with an optional seat back **66**, as shown in phantom lines in FIG. **3**.

If it is desired to operate vehicle **10** without seat base **16**, seat base **16** may be removed from base **12**. A pair of rear wheel supports **68**, shown in FIG. **9**, may be added upon removal of seat base **16**. Each support **68** has a coupling arm **70** extending therefrom which has a pair of through holes **72** extending therethrough. Through holes **72** align with through holes **26** in base **12**. Bolts **28** may be placed through through holes **26** and **72** to secure supports **68** to base **12**. Supports **68** have rearwardly extending wheel supports **74** with swivel casters **76** secured thereto in similar fashion as described above for seat base **16**.

As best seen in FIGS. **4** and **5**, front wheels **14** are rotatingly secured to base **12** with gearbox shafts **78** and **80**. Left wheel **14**A is placed on shaft **78** and right wheel **14**B is placed on shaft **80**. Front wheels **14** are then secured against movement along shafts **78** and **80** by hubs **82**. Each front wheel **14** is free to move independently of the other wheel **14**. In other words, left wheel **14**A is free to move in one direction while right wheel **14**B is free to move in the opposite direction. The independent movement of front wheels **14** allows for increased maneuverability of vehicle **10**, as is more fully discussed below.

Vehicle **10** is driven by motors **84** and **86**, as best seen in FIG. **5**. Motor **84** is coupled to a gear box **88**, which has

protruding therefrom shaft **78** for mounting of wheel **14**A, as discussed above. Motor **86** is coupled with a corresponding gear box **90**, which has protruding therefrom shaft **80** for mounting of wheel **14**B, as discussed above. The rotational power generated by motor **84** is transmitted through gearbox **88** to shaft **78** and front wheel **14** mounted thereon. Correspondingly, the rotational power generated by motor **86** is transmitted through gear box **90** to shaft **80** and front wheel **14** mounted thereon. It can therefore be seen that front wheels **14** are free to move independently of one another, and that front wheel **14**A could rotate in a different direction from front wheel **14**B. Gear boxes **88** and **90** are mounted on a front support plate **92** that is in turn fixedly secured to base **12**. Gearboxes **88** and **90** thus secure motors **84** and **86** respectively to vehicle **10** and also secure front wheels **14** to vehicle **10**.

Immediately behind front support plate **92** and intermediate motors **84** and **86** and gear boxes **88** and **90** is housed a pair of batteries **94**. Batteries **94** supply the necessary energy to drive and operate vehicle **10**, including actuators **36** and **62**. Batteries **94**, motors **84** and **86** and gearboxes **88** and **90** are protected from debris by a lower cover **96**.

Located behind gear boxes **88** and **90** is a vertical support frame **98** that extends from and is secured to base **12**, such as by welding. Support frame **98** is equipped with an upper cover **100** that protects elements mounted thereto. Support frame **98** is preferably made of square steel bar supports **102** which are welded to a support plate **104**. Other arrangements for support frame **98** could, of course, be used as long as they provide a rigid vertical structure for the mounting of equipment and support of the occupant, as further described below. A pair of bearing blocks **106** are secured to support plate **104** through a suitable attaching mechanism, such as bolts **108**. Bearing blocks **106** support a lift shaft **110** that is inserted through the bearing surfaces of bearing blocks **106** so that lift shaft **110** is free to rotate within bearing blocks **106**. A pair of collars may be secured to lift shaft **110** on either side of bearing blocks **106** to prevent lift shaft **110** from being axially displaced in bearing blocks **106**.

Coupled and extending outwardly from lift shaft **110** in the center thereof is a rectangular clevis **112** which may be attached to lift shaft **110** with any suitable means, such as by welding. As best seen in FIG. **7**, on the end of clevis **112** distal from lift shaft **110** is a through hole **114** that is used to couple clevis **112** with a linear actuator **116**. As best seen in FIG. **8**, Linear actuator **116** is pivotally secured to clevis **112** and vertical support frame **98**. More specifically, linear actuator **116** has an arm **118** extending therefrom with a mounting hole extending therethrough on its distal end. Arm **118** is coupled with clevis **112** by inserting a connecting rod **120** through the mounting hole and through hole **114**. Therefore, extension of arm **118** will act upon clevis **112** and lift shaft **110** to cause lift shaft **110** to rotate within bearing blocks **106**.

As best seen in FIG. **7**, fixedly secured to each end of lift shaft **110** is a lift lever **122**. Each lever **122** is secured to lift shaft **110** so that a rotation of lift shaft **110** results in a corresponding rotation of lift lever **122**. This result can be achieved in any of the well known manners, such as by a key and key-way arrangement between lift shaft **110** and lift levers **122**. Each lift lever **122** extends rearwardly toward seat **52** and has a length such that the end of lift lever **122** distal from lift shaft **110** generally coincides with the center of seat **52** when lift lever **122** is in a generally horizontal orientation. Extending outwardly from the distal end of lift lever **122** is a cylindrical protrusion **124**. Protrusion **124** may either be integrally formed with lift lever **122** or may be attached thereto. As best seen in FIG. **7**, preferably, protrusion **124** has a smaller diameter section located adjacent to lift lever **122** and a greater diameter section located in spaced relation to lever **122**. Protrusions **124** are used to secure a sling **126** to lift levers **122**. Sling **126** is preferably made of a fabric material and has a wider central section **128** and two outwardly extending support strips **130**. Secured to each of the support strips **130** on the end thereof is a mounting hook **132** which can be used to couple sling **126** to protrusions **124**, as best seen in FIG. **7**.

As best seen in FIG. **6**, secured to vertical support frame **98** on bar supports **102** are a pair of linear bearings **134** that slidingly receive and support a pair of extension shafts **136**. Extension shafts **136** are free to move linearly within linear bearings **134**, but are prohibited from moving beyond linear bearings **134** and are also generally prohibited from any transverse movement within bearings **134**. The upper ends of extension shafts **136** are fixedly secured to a hip support frame **138**. Hip support frame **138** is composed of a pair of end pieces **140** that are secured to a top plate **142** and a front plate **144**. Secured to front plate **144** intermediate end pieces **140** is a support brace **146** that increases the structural integrity of hip support frame **138**. As best seen in FIG. **3**, coupled to, and extending rearwardly from, hip support frame **138** is a padded hip support **148** that will support the occupant in a standing position, as is more fully described below. Also fixedly attached to hip support frame **138** is a second linear actuator **150**. Linear actuator **150** is equipped with an arm **152** that is extendable from and retractable within actuator **150** that can be used to raise and lower hip support frame **138** and thus hip support **148**. Thus, when arm **152** is extended, hip support **148** will be raised, and when arm **152** is fully retracted, hip support **148** will be in its lowest position. In order to achieve this purpose, linear actuator **150** is fixedly secured to vertical support frame **98** with any suitable attaching means, such as by nut and bolt arrangement. Therefore, linear actuator **150** can be used to raise and lower hip support **148** in relation to vertical support frame **98**, as may be needed to better support the occupant of vehicle **10** as well as to increase the comfort of the occupant.

As best seen in FIG. **5**, attached to a top surface **154** of top plate **142** is a control device **156**. Control device **156** is preferably a joystick type controller that can be used by the occupant of the vehicle to operate all aspects thereof. Control device **156** is used in cooperation with a power module **158** and an accessories module **160** to provide the control system which allows the occupant to control the vehicle. Control device **156** allows the occupant to control the lifting and lowering of sling **126**, the raising and lowering of hip support **148**, as well as the speed and direction of travel for vehicle **10**. A preferred control system is the DX™ MODULAR MOBILITY SYSTEM available from Dynamic Controls, Ltd. of Christchurch, New Zealand. In this preferred embodiment, control device **156** is a DX-REM 41 DOLPHIN REMOTE™, power module **158** is preferably a DX-PM POWER Module™ and accessories module **160** is preferably a DX-Clam™ accessories module which are all available from Dynamic Controls, Ltd. of Christchurch, New Zealand. Control device **156**, power module **158** and accessories module **160** allow the occupant of vehicle **10** to effect the operation thereof. Extending outwardly and rearwardly from support frame **138** is a padded leg divider **162**, as can best be seen in FIG. **4**, which acts to physically separate and partially support the occupant's legs when the occupant is in a standing position.

As can best be seen in FIGS. **1**, **2** and **3**, pivotally coupled to the upper end of support frame **98** is a padded upper body

support **164**. Upper body support **164** has a generally u-shaped frame **166**, to which is coupled an upper body pad **168**. Frame **166** is attached to support frame **98** with a ratchet coupling **170**. Ratchet coupling **170** operates to lock support **164** in the desired position. As seen in FIG. **3**, upper body support **164** is rotated to an extended position when the occupant is in a standing position. When the occupant is in a seated position, as shown in FIG. **2**, upper body support **164** is rotated to rest against upper cover **100**. Ratchet coupling **170** is equipped with a release lever **172**, as shown in FIG. **1**. Lever **172** acts to release a pawl from the ratchet teeth of coupling **170**, thus allowing upper body support **164** to freely rotate. Rigidly secured to top surface **154** is a u-shaped rigid support handle **174**, usable by the occupant for support when in a standing position.

In use, lift levers **122** will be in a raised position as best seen in FIG. **3**, with sling **126** resting on seat **52** and with support strips **130** hanging downwardly therefrom. In this position, sling **126** is not attached to lift levers **122**. The occupant desiring to use vehicle **10** thereafter approaches vehicle **10** and transfers himself to seat **52** so that he is resting on seat **52**. Lift levers **122** are thereafter lowered by the occupant through the use of a joystick **176** on control device **156**. After lift levers **122** have been sufficiently lowered, the occupant will attach sling **126** to lift levers **122** by attaching mounting hooks **132** over protrusions **124**. The occupant is now in the position illustrated in FIG. **2**. At this point, the occupant will operate control device **156** to raise lift levers **122**. Control device **156** will therefore activate linear actuator **116** to extend arm **118** therefrom. As arm **118** extends from actuator **116**, clevis **112** is rotated upwardly, as best seen in phantom lines in FIG. **8**. Because clevis **112** is fixed to lift shaft **110**, rotation of clevis **112** will result in a rotation of lift shaft **110**. Further, because lift shaft **110** is secured to lift levers **122**, rotation of shaft **110** will result in a rotation of lift levers **122**. Therefore, as lift levers **122** are rotated upwardly, sling **126** will engage the occupant and effect a lifting motion thereon. Thus, the occupant is able to be transported to a standing position without the use of a great amount of upper body strength.

Depending on the size of the occupant, it may also be necessary for the occupant to raise hip support **148**, which can also be controlled by control device **156**. If it is desired to raise hip support **148**, control device **156** can be used to activate linear actuator **150** so that arm **152** is extended therefrom. Arm **152** will act upon hip support frame **138** to cause it to be raised upwardly. Hip support **138** is supported in this upward movement by extension shafts **136** sliding within linear bearings **134**. As can therefore be seen, vehicle **10** allows an occupant to adjust the hip support of the vehicle so that the occupant is both comfortable and supported in a stable, standing position. Control device **156** can thereafter be used to activate motors **84** and **86** to propel vehicle **10** forwardly and can also be used to steer vehicle **10**.

From the foregoing, it will be seen that this invention is one well adapted to obtain all of the ends and objects hereinabove set forth together with other advantages which are obvious and which are inherent to the structure. It will be understood that certain features and subcombinations are of utility and may be employed without reference to other features and subcombinations.

Since many possible embodiments may be made of the invention without departing from the scope thereof, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described the invention, we claim:

1. An occupant-operated vehicle for supporting and transporting an occupant along a traveling surface in a standing or sitting position, comprising:

a horizontally-oriented support platform having spaced front and rearward ends;

at least one pair of wheels supporting said platform above the traveling surface;

a frame coupled to said platform extending vertically upwardly from said platform;

a support sling pivotally coupled to said frame, said sling adapted to contact an occupant and adapted to support the weight of the occupant;

an actuator, coupled to said frame and said sling, said actuator adapted to operate to lift the occupant from a supported seated position to a standing position on said platform supported against said frame;

a hip support coupled to said frame;

means for vertically adjusting the height of the hip support which is adapted to be operable by the occupant; and

means, coupled to at least one of said wheels and adapted to be operable by the occupant, for propelling the vehicle along the traveling surface.

2. The vehicle of claim **1**, further comprising:

a lift shaft, rotatably coupled to said frame, said lift shaft having opposed terminal ends; and

a first lift lever and a second lift lever, each having a shaft end fixedly coupled to one of said terminal ends of said lift shaft, and each having a coupling end distal from said shaft end and extending towards said rearward end of said platform, said support sling extending between said first and second lift levers and having a first end coupled to said coupling end of said first lift lever and having a second end coupled to said coupling end of said second lift lever.

3. The vehicle of claim **2**, wherein said sling is removably coupled to said first and second lift levers.

4. The vehicle of claim **3**, wherein said sling is flexible and is adapted to be formed to the shape of the occupant where said sling contacts said occupant.

5. The vehicle of claim **4**, further comprising a seat coupled to said platform adjacent said rearward end between said rearward end and said frame and spaced above said platform, said seat adapted to support the occupant when the occupant is in a seated position.

6. The vehicle of claim **5**, wherein said frame has a lower end coupled to said platform and an upper end distal from said lower end, wherein said hip support is coupled to said upper end of said frame, said hip support and said actuator adapted to cooperate to support the occupant in a fully standing position on said platform.

7. The vehicle of claim **6**, further comprising a joy-stick controller coupled to said frame for controlling said propelling means, said actuator and said means for vertically adjusting the height of the hip support.

8. An occupant-operated vehicle for supporting and transporting a paraplegic occupant along a traveling surface in a standing or sitting position, comprising:

a horizontally-oriented support platform having spaced front and rearward ends;

at least one wheel rotatably coupled to said platform adjacent said front end and at least one wheel rotatably coupled to said platform adjacent said rearward end, said wheels supporting said platform above the traveling surface;

a frame coupled to said platform and extending vertically upwardly from said platform;

a seat coupled to said platform adjacent said rearward end between said rearward end and said frame and spaced above said platform, said seat adapted to support the occupant when the occupant is in a seated position;

a support sling pivotally coupled to said frame, said sling having an upper and a lower position, said sling extending over said seat when said sling is in said lower position, said sling adapted to contact the occupant and adapted to support the weight of the occupant;

an actuator, coupled to said frame and said sling, said actuator adapted to operate to move said sling from said lower position to said upper position to lift the occupant from a supported seated position to a standing position on said platform supported against said frame;

a padded upper body support coupled to said frame;

a padded hip support coupled to said frame; and

means, coupled to at least one of said wheels and adapted to be operable by the occupant, for propelling the vehicle along the traveling surface.

9. The vehicle of claim **8**, wherein said frame has a lower end coupled to said platform and an upper end distal from said lower end, wherein said hip support is coupled to said upper end of said frame, said hip support and said actuator adapted to cooperate to support the occupant in a fully standing position on said platform.

10. The vehicle of claim **9**, further comprising means for vertically adjusting said hip support relative to said frame to accommodate occupants of differing size.

11. The vehicle of claim **10**, further comprising:

a lift shaft, rotatably coupled to said frame, said lift shaft having opposed terminal ends; and

a first lift lever and a second lift lever, each having a shaft end fixedly coupled to one of said terminal ends of said lift shaft, and each having a coupling end distal from said shaft end and extending towards said rearward end of said platform, said support sling extending between said first and second lift levers and having a first end coupled to said coupling end of said first lift lever and having a second end coupled to said coupling end of said second lift lever.

12. The vehicle of claim **11**, further comprising a joy-stick controller coupled to said frame for controlling said propelling means, said actuator and said means for vertically adjusting the height of the hip support.

13. An occupant-operated vehicle for supporting and transporting an occupant along a traveling surface in a standing or sitting position, comprising:

a horizontally-oriented support platform having spaced front and rearward ends;

at least one pair of wheels supporting said platform above the traveling surface;

a frame coupled to said platform extending vertically upwardly from said platform;

means, adapted to be operable by the occupant; for lifting the occupant from a supported seated position to a standing position on said platform supported against said frame, said lifting means being coupled to said frame;

a hip support coupled to said frame;

means for vertically adjusting the height of the hip support which is adapted to be operable by the occupant;

a joy-stick controller coupled to said frame for controlling said propelling means, said actuator and said means for vertically adjusting the height of said hip support; and

means, coupled to at least one of said wheels and adapted to be operable by the occupant, for propelling the vehicle along the traveling surface.

14. The vehicle of claim **13**, wherein said lifting means comprises:

a lift shaft, rotatably coupled to said frame, said lift shaft having opposed terminal ends;

a first lift lever and a second lift lever, each having a shaft end fixedly coupled to one of said terminal ends of said lift shaft, and each having a coupling end distal from said shaft end and extending towards said rearward end of said platform;

a support sling extending between said first and second lift levers and having a first end coupled to said coupling end of said first lift lever and having a second end coupled to said coupling end of said second lift lever, said sling adapted to contact the occupant and adapted to support the weight of the occupant; and

a means, adapted to be controllable by the occupant for rotating said lift shaft between a lowered position, wherein said sling and said first and second lift levers are adapted to support the occupant in a fully seated position, and a raised position, wherein said sling is adapted to support said occupant in a standing position on said platform.

15. The vehicle of claim **14**, wherein said sling is removably coupled to said first and second lift levers.

16. The vehicle of claim **15**, wherein said sling is flexible and is adapted to be formed to the shape of the occupant where said sling contacts said occupant.

17. The vehicle of claim **16**, further comprising a seat coupled to said platform adjacent said rearward end between said rearward end and said frame and spaced above said platform, said seat adapted to support the occupant when the occupant is in a seated position.

18. The vehicle of claim **17**, wherein said frame has a lower end coupled to said base and an upper end distal from said lower end, wherein said hip support is coupled to said upper end of said frame, said hip support and said lifting means adapted to cooperate to support the occupant in a fully standing position on said platform.

19. The vehicle of claim **18**, further comprising means for vertically adjusting the hip support which are adapted to be operable by the occupant.

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